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DATE: January 10, 2006

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In re the Application of:

Krishna Kishore Yellepeddy )

Serial Number: 10/044,998 )

Group: 2161

Docket Number: AUS920010273US1 )

Examiner: Cindy Nguyen

Filed on: 01/10/2002 )

For: "System and Method for )

Metadirectory Differential Updates )

Among Constituent Heterogeneous )

Data Sources" )

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Effective on 12/08/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818). <b>FEE TRANSMITTAL</b> <b>For FY 2005</b>		<b>Complete if Known</b>	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	10/044,998
<b>TOTAL AMOUNT OF PAYMENT (\$)</b> 500.00		Filing Date	01/10/2002
		First Named Inventor	Krishna Kishore Yellepeddy
		Examiner Name	Cindy Nguyen
		Art Unit	2161
		Attorney Docket No.	AUS920010273US1

**METHOD OF PAYMENT** (check all that apply)

☐ Check 
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 Deposit Account Number: 09-0447 
 Deposit Account Name: Int'l Business Machines

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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**FEE CALCULATION**

**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES**

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

**Total Claims**      **Extra Claims**      **Fee (\$)**      **Fee Paid (\$)**

- 20 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of total claims paid for, if greater than 20.

**Indep. Claims**      **Extra Claims**      **Fee (\$)**      **Fee Paid (\$)**

- 3 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____	_____	_____	_____	_____

- 100 = \_\_\_\_\_ / 50 = \_\_\_\_\_ (round up to a whole number) x \_\_\_\_\_ = \_\_\_\_\_

**4. OTHER FEE(S)**

Other (e.g., late filing surcharge): Fee under 37 CFR 41.20(b)(2) for filing an Appeal Brief	Fees Paid (\$)
Non-English Specification, \$130 fee (no small entity discount)	
Other (e.g., late filing surcharge):	500

<b>SUBMITTED BY</b>		
Signature	<u>/ Robert Frantz /</u>	Registration No. (Attorney/Agent) 42,553
Name (Print/Type)	Robert H. Frantz	Telephone 405-812-5613
		Date Jan. 10, 2006

This collection of information is required by 37 CFR 1.138. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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In re the Application of:

Krishna Kishore Yellepeddy	)	
Serial Number: 10/044,998	)	Group: 2161
Docket Number: AUS920010273US1	)	Examiner: Cindy Nguyen
Filed on: 01/10/2002	)	
For: "System and Method for	)	
Metadirectory Differential Updates	)	
Among Constituent Heterogeneous	)	
Data Sources"	)	

**APPEAL BRIEF*****Real Party in Interest per 37 CFR §41.37(c)(1)(i)***

The subject patent application is owned by International Business Machines Corporation of Armonk, NY.

***Related Appeals and Interferences per 37 CFR §41.37(c)(1)(ii)***

The present patent application is not related to any other patent applications under appeal or interference proceedings.

***Status of Claims per 37 CFR §41.37(c)(1)(iii)***

The final rejections of claims 1 - 5, 7 - 11 and 13 - 19 were appealed on November 10, 2005.

***Status of Amendments after Final Rejections per 37 CFR §41.37(c)(1)(iv)***

No amendments to the claims have been submitted or entered after final rejections.

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***Summary of the Claimed Subject Matter per 37 CFR §41.37(c)(1)(v)***

The invention addresses inefficiencies in the propagation and implementation of change commands in metadirectories. Metadirectories are groups or sets of electronic directories. The electronic directories are "joined" into a metadirectory, so that the contents of the joined directories, such as programs, files, databases, etc., can be conveniently accessed and managed as if they were actually stored in a single, comprehensive directory. Typically, when change commands to copies of directory contents are propagated through the metadirectory, the change commands may have considerable ineffective commands in them. For example, to change a single data item in a record (e.g. a row) of a database where the record has 500 total data items (e.g. 500 columns or "attributes"), a typical metadirectory change command will contain commands for the entire row (e.g. all 500 data items), only one of which has any actual effect on the stored data.

In independent Claims 1, 7, and 13, we have claimed our method and analogous system and computer-readable media realizations of the invention, for more efficiently propagating and implementing a metadirectory update command by performing at least the following six steps (or elements), all of which being claimed as performed by a metadirectory joiner plug-in (pg. 11 line 11):

- (a) receiving a first update operation for a first entry in a first data source (pg. 22 lines 3 - 6, fig. 8 #81);
- (b) selecting a best match entry of the metadirectory to the first entry in the first data source (pg. 25 line 19 - pg. 28 line 16, fig. 8 #82, fig. 9);
- (c) applying the update operation to a local temporary copy of the best matching metadirectory entry (pg. 22 lines 3 - 6, fig. 8 #82);
- (d) comparing the updated local temporary copy to an original unmodified entry in the metadirectory (pg. 22 lines 8 - 10, fig. 8 #83);
- (e) responsive finding that one or more differences occurred due to the application of the update operation (pg. 22 lines 14 - 16), creating a differential update command containing only changed fields in the updated temporary copy (pg. 22 lines 14 - 16), and omitting (fig. 8 #84 #85) operations resulting in no net change to said updated temporary copy (pg. 23 lines 7 - 10, fig. 8 #86); and

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- (f) propagating the differential update command to at least one other joined data source to implement said first update operation (pg. 22 lines 16 - 18, fig. 8 #87).

Independent claim 19 has many steps in common with claim 1, but specifically claims the steps of suppressing propagation of the originally received update command:

- (i) suppressing propagation by the joiner plug-in of said updated temporary copy of said metadirectory entry to other joined datasources within a metadirectory (pg. 22 lines 11 - 18, fig. 8 #85); and
- (ii) responsive to identifying no differences, deleting by the joiner plug-in the updated temporary copy (pg. 22 lines 12 - 13).

In this manner, network bandwidth for transmission of thousands of metadirectory updates, and processor bandwidth for implementing thousands of metadirectory updates, is more efficiently utilized by only propagating and implementing our "differential" updates. This increase in efficiency is considerable when the volume of updates per second/minute/hour is considered, and especially as the sizes of metadirectories continue to grow.

***Grounds for Rejection For Which Review is Sought per 37 CFR §41.37(c)(1)(vi)***

Review by the Board is requested of:

- (a) the rejections of claims 1 - 5, 7 - 11 and 13 - 14 under 35 U.S.C. §101;
- (b) the rejections of claims 1 - 2, 5, 7 - 8, 11, 13 - 14, 17, and 19 under 35 U.S.C. §103(a) over non-patent literature "Microsoft Metadirectory Services Concepts and Architecture" (hereinafter "MS"), in view of US Patent 6,615,223 to Shih (hereinafter "Shih"); and
- (c) the rejections of claims 3, 4, 9, 10, 15, and 16 under 35 U.S.C. §103(a) over MS in view of Shih in further view of US Published Patent Application 2002/0038308 to Cappi (hereinafter "Cappi").

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*Arguments per 37 CFR §41.37(c)(1)(vii)***Rejections of Claims 1 - 14 under 35 U.S.C. §101**

Claims 1 - 14 were officially finally rejected under 35 U.S.C. §101 in the Office Action of 8/10/2005. Claim 19 was also mentioned in the rationale, so for the purposes of this Appeal, Appellant assumes that Claim 19 was also rejected under 35 U.S.C. §101.

These rejections were first made in the second and final Office Action, and as such, this Appeal Brief is Appellant's first opportunity to respond to rejections under 35 U.S.C. §101.

Regarding claims 6, 12, and 18 were canceled by amendment on May 25, 2005, and thus the rejections of canceled claims should be reversed or set aside.

Regarding claims 1 - 5, 7 - 11, 13 - 14 and 19, the rationale for the rejections stated that claims 1 and 19 only recite an abstract idea for synchronization and propagation of metadirectory updates, and that "technological arts as computer" are not employed.

A metadirectory, as defined by our disclosure and as generally accepted by those in the data processing industry, is necessarily a computer-based, tangible and concrete thing. Metadirectories are not mentally accessible, nor are they mentally manipulatable. From our disclosure, the definition of a metadirectory is given as:

[0018] The term "metadirectory" refers to a class of enterprise directory management tools which provide means to manage and synchronize two or more directories containing heterogeneous data sources. In order to manage disparate heterogeneous data sources, a typical metadirectory product may require the individual data sources (e.g. directories, files, databases, etc.) to export their data to a common format, and then exchange that data with the metadirectory using file transfer, electronic mail, or other data transfer protocol. After the metadirectory receives the files from the data sources, an administrator can add or modify the data from the metadirectory. One such product is the VIA product, originally provided by the Zoomit Corporation, which was acquired by Microsoft Corporation.

...

[0020] Through use of metadirectories, these various data stores may be stored once and integrated so that they may be managed and administered as a single entity (according to the rules and constraints of the metadirectory), thereby reducing the total cost of maintaining this information while increase the security and reliability with which it is handled.

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Further definition of the metadirectory components of the preferred embodiment is provided in our paragraphs [0039] - [0041], including an explicit statement that a computer is used to host or run the metadirectory application programs and software suites (para. [0001]), that metadirectories include utilization of computer networks (para. [0015]), and computer resources such as memory and processor time (para. [0015]).

Usage of the term "metadirectory" in this manner is not only permissible, whereas the inventor may be his or her own lexicographer, but it is consistent with common terminology used in the relevant arts:

**Metadirectory**

A metadirectory system provides for the flow of data between one or more directory services and databases, in order to maintain synchronization of that data, and is an important part of identity management systems. The data being synchronized typically are collections of entries that contain user profiles and potentially authentication or policy information. Most metadirectory deployments synchronize data into at least one LDAP-based directory server, to ensure that LDAP-based applications such as single sign-on and portal servers have access to recent data, even if the data is mastered in a non-LDAP data source. (Source: <http://www.wikipedia.org>)

Databases, propagation of information over computer networks, and the like, are certainly not merely abstract ideas, and are not devoid of the "technological arts such as a computer", but instead are concrete, tangible products, running on computers, and utilizing many types of equipment for communications such as routers, modems, cables, etc.

Therefore, as independent claims 1, 7, 13, and 19 recite the terms "metadirectory", "propagation", and "data sources", the claims are directed towards technological arts of computers and communications, and therefore produce concrete and tangible results.

For these reasons, reversal of the rejections of claims 1 - 5, 7 - 11, 13 - 14 and 19 under 35 U.S.C. §101 is requested by Appellant.

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**Rejections of Claims 1 - 2, 5, 7 - 8, 11, 13 - 14, 17, and 19 under 35 U.S.C. §103(a)  
over MS in view of Shih**

In the rationale for these rejections, it was stated that MS teaches propagating a differential update command on page 8, first paragraph. However, the following is a quotation of the first paragraph appearing on page 8 of MS:

**Failure Management**

The ability to propagate a change to multiple repositories is a key requirement for identity flow management technologies. Yet, any time an engine makes multiple updates, the opportunity exists for one or more of the updates to fail and for data in different repositories to become inconsistent as illustrated in Figure 7 below. For example, if a person's title, salary and spending limit are changed, but the metadirectory is unable to update the user's title in applications, identity data will be left in a state of confusion. Typically, this means that an administrator must investigate the situation and make corrections.

This paragraph contains no mention of "differential updates" as we have defined and claimed them (e.g. updates which only include change commands which result in a net change). It is possible that the rationale for the rejection was referring to the *eight*h page of MS, where the first paragraph reads just two bullets:

- Delete objects from the repository.
- Change an existing object's attributes to different values.

The following page (noted as page 5 at the bottom of the MS document), first paragraph covers to some extent their change handling processes:

**Change Event Processing**

Change events occur any time administrators, users or applications add, delete or modify a piece of identity data in a repository. Unmanaged, identity data changes quickly becomes disorganized. Identity management solutions therefore must provide features to detect changes, perform necessary data format translations and then update all repositories that should reflect the changes. For example, if an



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administrator adds a new employee to the human resources (HR) database, this change event needs to cause systems that the person will use to reflect the addition. In Figure 3 above, the change is propagated to other directories and applications.

These paragraphs also fail to disclosure creating "differential updates" as we have defined and claimed them (e.g. updates which only include change commands which result in a net change).

While the burden to establish a *prima facie* case of obviousness lies with the examiner, following a thorough review of the cited references, Appellant's representative is unable to locate *any* reference to "differential", "delta", or "net differences", in either of the cited references. The MS publication is available to Appellant's representative in electronic form (MS Word format), and the Shih disclosure is available in electronic form (HTML) on the USPTO's web site. A word search on these terms in the electronic forms of the references reveals no such teachings, either.

Therefore, the examiner has failed to properly establish a *prima facie* case of obviousness under Title 35 U.S.C. §103, and the cited references fail to teach all of our claimed steps, elements, and limitations. For these reasons, Appellant requests reversal of the rejections of claims 1 - 2, 5, 7 - 8, 11, 13 - 14, 17, and 19 under 35 U.S.C. §103(a) over MS in view of Shih.

**Rejections of Claims 3, 4, 9, 10, 15, and 16 under 35 U.S.C. §103(a) over MS in view of Shih in further view Cappi**

In the rationale for these rejections, Cappi was employed to teach use of a synonym list in the step to find a best matching entry in the data source (or the corresponding system element).

Cappi is silent as to teaching creation or propagation of differential updates, as we have defined and claimed them. A word search on the HTML version of the Cappi disclosure, available on the USPTO's web site, reveals no occurrences of the terms "differential" or "net" appears in the entirety of Cappi's disclosure.

Further, Cappi is directed towards creating a consolidated dictionary from multiple databases to enable expansive searches and queries (paras. [0001], [0008]), but provides no motivation to combine with change command processing and propagation functions of a meta-

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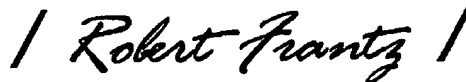
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directory. Whereas MS and Shih also fail to teach differential update handling as discussed in the foregoing paragraphs, there is no motivation provided by MS, Shih, or Cappi to combine or modify in order to achieve our claimed steps, elements, and limitations.

Therefore, the examiner has failed to properly establish a *prima facie* case of obviousness under Title 35 U.S.C. §103, the cited references fail to teach all of our claimed steps, elements, and limitations, and no motivation is provided by the cited references to combine or modify as proposed. For these reasons, Appellant requests reversal of the rejections of claims 3, 4, 9, 10, 15, and 16 under 35 U.S.C. §103(a) over MS in view of Shih in further view of Cappi.

Respectfully,



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**Claims Appendix***per 37 CFR §41.37(c)(1)(viii)***Clean Form of Amended Claims****Claim 1 (previously amended):**

A method for synchronization and propagation of metadirectory updates, said metadirectory comprising a plurality of joined heterogeneous data sources, said data sources comprising one or more entries having one or more attributes, said method comprising the steps of:

receiving by a joiner plug-in a first update operation for a first entry in a first data source;

selecting by said joiner plug-in a best match entry of said metadirectory to said first entry in the first data source;

applying by said joiner plug-in said update operation to a local temporary copy of said best matching metadirectory entry;

comparing by said joiner plug-in said updated local temporary copy to an original unmodified entry in said metadirectory;

responsive to said step of comparing finding that one or more differences occurred due to the application of said update operation, creating by said joiner plug-in a differential update command containing only changed fields in said updated temporary copy, thereby omitting operations resulting in no net change to said updated temporary copy; and

propagating by said joiner plug-in said differential update command to at least one other joined data source to implement said first update operation.

**Claim 2 (original):**

The method as set forth in Claim 1 wherein said step of receiving a first update operation comprises receiving an LDAP change operation.

Serial No. 10/044,998Krishna Kishore YellepeddyPage 10 of 17**Claim 3 (original):**

The method as set forth in Claim 1 wherein said step of selecting a best match entry of said metadirectory comprises the step of consulting a synonym list to resolve multiple matches.

**Claim 4 (original):**

The method as set forth in Claim 1 wherein said step of selecting a best match entry of said metadirectory comprises the step of performing a weighted scoring analysis across two or more attributes.

**Claim 5 (original):**

The method as set forth in Claim 1 wherein said step of propagating a differential update command comprises the step of transmitting an LDAP change operation.

**Claim 6 (previously canceled).**

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**Claim 7 (previously amended):**

A computer readable medium encoded with software for synchronization and propagation of metadirectory updates, said metadirectory comprising a plurality of joined heterogeneous data sources, said data sources comprising one or more entries having one or more attributes, said software causing one or more processors to perform the steps of:

receiving by a joiner plug-in a first update operation for a first entry in a first data source;

selecting by said joiner plug-in a best match entry of said metadirectory to said first entry in the first data source;

applying by said joiner plug-in said update operation to a local temporary copy of said best matching metadirectory entry;

comparing by said joiner plug-in said updated local temporary copy to an original unmodified entry in said metadirectory;

responsive to said step of comparing finding that one or more differences occurred due to the application of said update operation, creating by said joiner plug-in a differential update command containing only changed fields in said updated temporary copy, thereby omitting operations resulting in no net change to said updated temporary copy; and

propagating by said joiner plug-in said differential update command to at least one other joined data source to implement said first update operation.

**Claim 8 (original):**

The computer readable medium as set forth in Claim 7 wherein said software for receiving a first update operation comprises software for receiving an LDAP change operation.

Serial No. 10/044,998Krishna Kishore YellepeddyPage 12 of 17**Claim 9 (original):**

The computer readable medium as set forth in Claim 7 wherein said software for selecting a best match entry of said metadirectory comprises software for consulting a synonym list to resolve multiple matches.

**Claim 10 (original):**

The computer readable medium as set forth in Claim 7 wherein said software for selecting a best match entry of said metadirectory comprises software for the step of performing a weighted scoring analysis across two or more attributes.

**Claim 11 (original):**

The computer readable medium as set forth in Claim 7 wherein said software for propagating a differential update command comprises software for transmitting an LDAP change operation.

**Claim 12 (previously canceled).**

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**Claim 13 (previously amended):**

A system for synchronization and propagation of metadirectory updates, said metadirectory comprising a plurality of joined heterogeneous data sources, said data sources comprising one or more entries having one or more attributes, said system comprising:

an update operation receiver disposed in a joiner plug-in adapted to receive a first metadirectory update operation for a first entry in a first data source;

a matcher disposed in said joiner plug-in adapted to select a best match entry of said metadirectory to said first entry in the first data source;

a comparator disposed in said joiner plug-in adapted to apply said first update operation to a local temporary copy of said best matching metadirectory entry, and to detect differences between said updated local temporary copy to an original unmodified entry in said metadirectory;

a differential update command creator adapted to create a second metadirectory update command responsive to identification of one or more differences detected by said comparator, said differential update command containing only update command pertaining to changed fields in said updated temporary copy, thereby omitting operations resulting in no net change to said updated temporary copy;

an update propagator disposed in said joiner plug-in adapted to propagate [[a]] said differential update command to at least one other joined data source to implement said first update operation.

**Claim 14 (original):**

The system as set forth in Claim 13 wherein said update operation receiver is adapted to receive an LDAP change operation.

**Claim 15 (original):**

The system as set forth in Claim 13 wherein said matcher is adapted to consult a synonym list to resolve multiple matches.

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**Claim 16 (original):**

The system as set forth in Claim 13 wherein said matcher is adapted to perform a weighted scoring analysis across two or more attributes.

**Claim 17 (original):**

The system as set forth in Claim 13 wherein said update propagator is adapted to transmit an LDAP change operation.

**Claim 18 (previously canceled)**



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Claim 19 (previously added):

A method comprising the steps of:

receiving by a joiner plug-in a first metadirectory update operation for a first entry in a first data source, said metadirectory comprising a plurality of joined heterogeneous data sources, said data sources comprising one or more entries having one or more attributes;

selecting by said joiner plug-in a best match entry of said metadirectory to said first entry in the first data source;

applying by said joiner plug-in said update operation to a local temporary copy of said best matching metadirectory entry;

suppressing propagation by said joiner plug-in of said updated temporary copy of said metadirectory entry to other joined datasources within a metadirectory;

comparing by said joiner plug-in said updated local temporary copy to an original unmodified entry in said metadirectory;

identifying by said joiner plug-in one or more differences resulting from said step of comparing;

responsive to identifying no differences, deleting by said joiner plug-in said updated temporary copy;

responsive to identifying one or more differences, creating by said joiner plug-in a differential update command containing only changed fields in said updated temporary copy, thereby omitting operations resulting in no net change to said updated temporary copy; and

propagating by said joiner plug-in said differential update command to at least one other joined data source to implement said first update operation.

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**Evidence Appendix**

*per 37 CFR §41.37(c)(1)(ix)*

No evidence has been submitted by applicant or examiner pursuant to 37 CFR §§1.130, 1.131, or 1.132.

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**Related Proceedings Appendix**

*per 37 CFR §41.37(c)(1)(x)*

No decisions have been rendered by a court or the Board in the related proceedings as identified under 37 CFR §41.37(c)(1)(ii).